AMENDMENTS TO THE SPECIFICATION

1. **Please replace paragraph [0035] with the following replacement paragraph:**

[0035] In indoor environments with multiple reflections and refractions, the gain of each path L_g can be modeled as a Rayleigh distributed random variable, while the phase is a uniformly distributed random variable. Since UWB systems employ real signals, only the real part of each path gain is of interest, which has Gaussian distribution with zero mean. As combinations of Gaussian random variables, $\alpha(l)$'s are also Gaussian distributed. If the finger delays are chosen such that $\tau(l)-\tau(l-1)\geq 2T_w, \forall l\in[1,L-1]$, then $E[\alpha(l_1)\alpha(l_2)]=0, \forall l_1\neq l_2$. In other words, $\alpha(l_1)$ and $\alpha(l_2)$ are uncorrelated $\forall l_1\neq l_2\in[0,L-1]$. Letting $\beta(l):=E[\alpha^2(l)]$, averaging the conditional BER over the independent Gaussian distributions of $\alpha(l)$ yields the average BER bounded as shown below.

$$P(error)\leq\prod_{l=0}^{L-1}E\left[\exp\left(-\rho\alpha^2(l)/2\right)\right]=\prod_{l=0}^{L-1}\left(1+\rho\beta(l)\right)^{-\frac{1}{2}} \quad (12)$$

At high SNR ~~$(\mathcal{E}/\sigma^2)$~~ $(\rho>>)$, the upper bound is given by:

$$P(error)\leq\left(\rho^L\prod_{l=0}^{L-1}\beta(l)\right)^{-\frac{1}{2}}=(\beta_L\rho)^{-\frac{L}{2}} \quad (13)$$

where coding gain $\beta_L:=\left(\prod_{l=0}^{L-1}\beta(l)\right)^{1/L}$.

2. **Please replace paragraph [0037] with the following replacement paragraph:**

[0037] FIG. 3 is a block diagram illustrating an example multi-antenna UWB communication system 30 that has two transmit antennas 36A, 36B and ~~one receive antenna~~ a rake receiver 40. FIG. 3 illustrates a specific example of the UWB system 2 more generally illustrated in FIGS. 1 and 2. In system 30, transmitter 4 ST-encodes data 32 and transmits ST-encoded UWB waveforms via channels 8 to receiver 6, which outputs estimated data 45. The ST coding schemes may be analog for use with the analog UWB system 30 to eliminate the need for sampling at the receiver 6.